

# PATENT ABSTRACTS OF JAPAN

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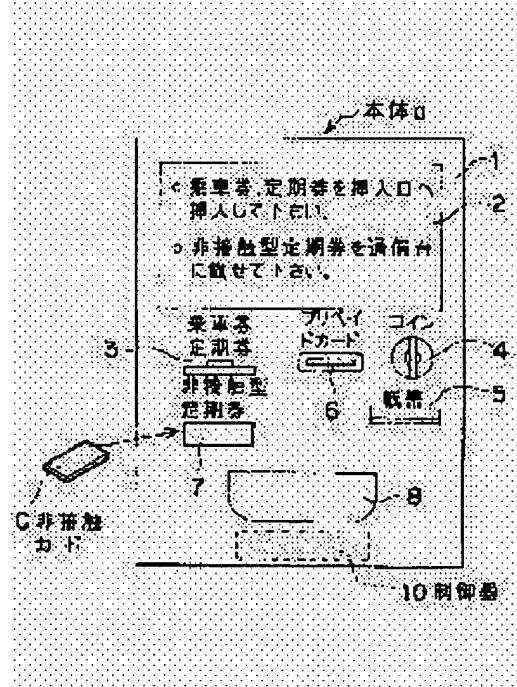
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## (54) AUTOMATIC FARE ADJUSTMENT DEVICE

### (57) Abstract:

**PURPOSE:** To enable a user to come out with a non-contact card by making calculation based on data recorded on the non-contact card so as to calculate and display a shortage amount in fare and writing adjusted data on the non-contact card when the shortage amount in fare is paid.

**CONSTITUTION:** By the communication between the device main body (a) and a non-contact card C, the contents of a memory 24 is read, the shortage amount in fare corresponding to the ride past section is calculated by a CPU 13 and displayed on a guide display part 2. Therefore, the user can adjust the shortage fare by inserting money corresponding to the shortage fare through a coin insertion port 4 and a paper memory insertion port 5. When the shortage in fare is paid, the adjusted data from the main body (a) are written in the memory 24 and a display indicating that the adjustment has completed appears on the guide display part 2. Thus, the user can take out the non-contact card C from a mount 7, non-contactedly communicate with an automatic ticket inspection device and go out a gate.



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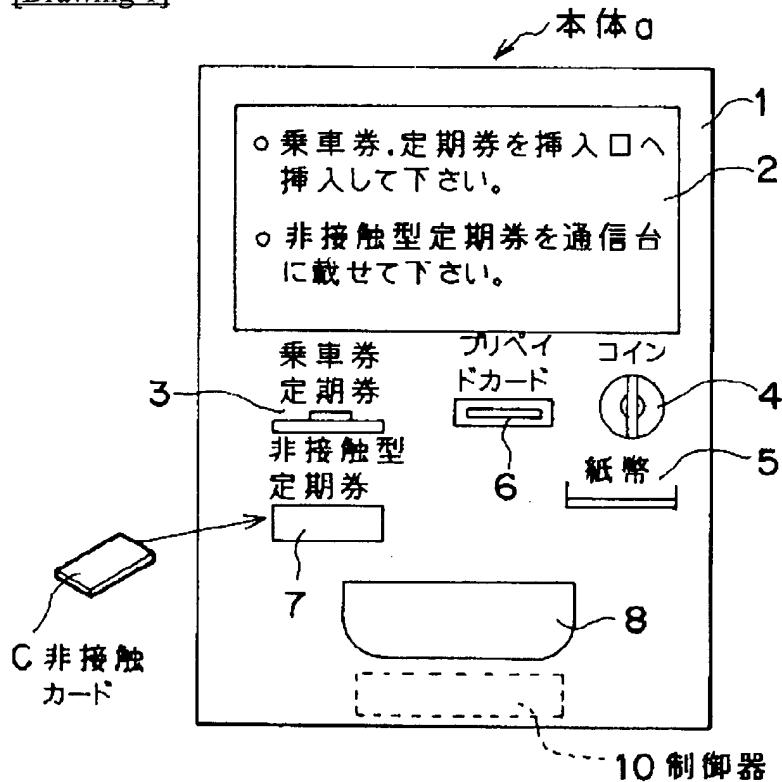
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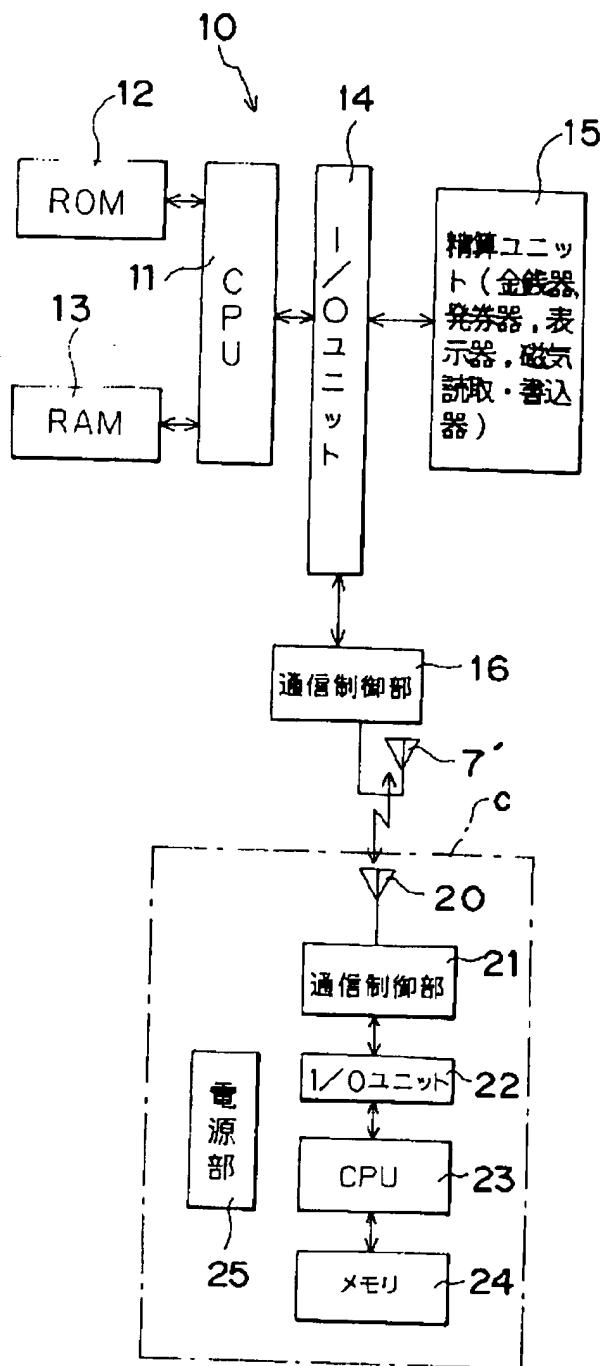
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## DRAWINGS

[Drawing 1]

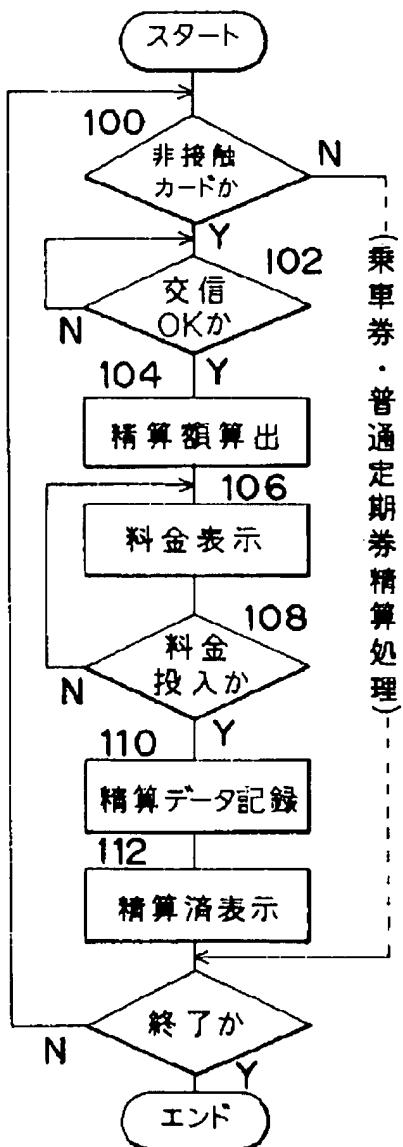


[Drawing 2]

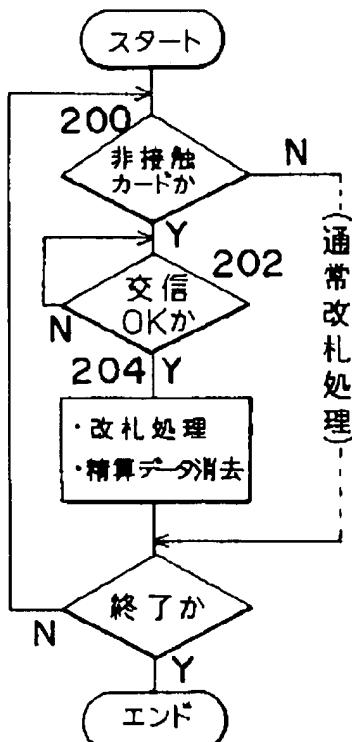


[Drawing 3]

(a)



(b)



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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to an automatic reset and relates to the suitable thing for a non-contact mold commuter pass especially.

[0002]

[Description of the Prior Art] Conventionally, if an insufficient tariff is injected into money input port while inserting in insertion opening of the body of an automatic-reset machine (henceforth a body) the ticket and commuter pass which carried out \*\*\*\*, this kind of automatic-reset machine is constituted so that a settlement-of-accounts ticket may be published. Therefore, a user can insert the settlement-of-accounts ticket in an automatic ticket gate, or can hand and participate in an official in charge.

[0003] By the way, although an automatic ticket gate is increasingly used abundantly in recent years, since the user of a commuter pass has the inconvenience that a commuter pass must be taken in and out of a pass holder whenever it passes through a wicket in the case of this automatic ticket gate, enabling it to clip, without considering as the non-contact mold commuter pass (henceforth a non-contact card) which is an IC card mold about a commuter pass, and was equipped with communication facility, and inserting in an automatic ticket gate is proposed (for example, JP,1-246687,A).

[0004]

[Problem(s) to be Solved by the Invention] Since it is possible that \*\*\*\* entrainment is performed with the non-contact card when a non-contact card is adopted, the automatic-reset machine is also wanted to enable it to correspond to a non-contact card.

[0005] Then, it is made in order that this invention may meet the above-mentioned request, and the purpose is in offer of an automatic-reset machine an automatic reset can also do a non-contact card.

[0006]

[Means for Solving the Problem] A communication means to communicate with a non-contact card in order that the automatic-reset machine concerning this invention may attain the above-mentioned purpose, An insufficient tariff calculation means to data-processing-compute an insufficient tariff based on the data currently recorded on said non-contact card inputted through said communication means, It is characterized by having a display means to display the insufficient tariff computed with said insufficient tariff calculation means, and the write-in means which writes paid data in said non-contact card through said communication means when the tariff displayed on said display means is injected.

[0007]

[Function] In the above-mentioned configuration, an insufficient tariff calculation means data-processing-computes an insufficient tariff based on the data currently recorded on the non-contact card inputted through the communication means, and displays this with a display means. And when the displayed tariff is injected, paid data are written in a non-contact card with a write-in means through a communication means. This becomes possible to participate with the non-contact card.

[0008]

[Example] Hereafter, the example of this invention is explained based on a drawing. Drawing 1 is the

front view of Body a. On the reception panel 1 When a prepaid card performs the annunciator section 2 to which it shows the insufficient tariff by \*\*\*\* etc., the ticket insertion opening 3 which inserts the ticket and commuter pass of \*\*\*\*, the coin input port 4 which throws in the coin of settlement of accounts, the bill input port 5 which throws in the bill of settlement of accounts, and settlement of accounts The controller 10 which controls in generalization the emission opening 8 and Body a which made change emission opening in case the installation base 7, and the settlement-of-accounts ticket and change of the prepaid card insertion opening 6 and the non-contact card C which insert the prepaid card of \*\*\*\* exist serve a double purpose is formed.

[0009] Drawing 2 shows the electric configuration of a controller 10 and the non-contact card C, and the central-process section (CPU) 11 performs data processing using the system program stored in ROM12, and the working data stored in RAM13. The settlement-of-accounts unit 15 and the communications control section 16 are connected to this CPU through the input/output unit 14.

[0010] The settlement-of-accounts unit 15 consists of magnetic reading, a write-in vessel, etc. which processes magnetic data, such as a money machine which processes the money invested in Body a as well as the configuration included in the well-known automatic-reset machine in the unit which pays the usual ticket and usual commuter pass on which magnetic data are recorded, an issue-of-banknotes machine which publishes a settlement-of-accounts ticket, and an inserted ticket.

[0011] The communications control section 16 makes the characteristic component of this invention, and it has the function transmitted to Card C from Body a while it receives the electric wave transmitted from the non-contact card C through antenna 7' built in the installation base 7. In addition, as a data transfer method between Body a and the non-contact card C, not only an above-mentioned electric-wave method but an optical communication type, an electromagnetic coupling type, or an electromagnetic induction type etc. is also employable.

[0012] The electric configuration by the side of the non-contact card C has an antenna 20, the communications control section 16 of Body a and the communications control section 21 which has the same function, an input/output unit 22, the memory 24 that consists of CPU23, a ROM, and RAM, and a power source 25. In addition, this power source 25 receives the power wave supplied from Body a, without having in the interior of Card C, and may be made to use it as a power source.

[0013] CPU23 is controlled to record the paid data from Body a on memory 24 while controlling the data of memory 24 to transmit to Body a side through the communications control section 21.

[0014] Next, actuation of the automatic ticket gate concerning this example is explained using the flow chart of drawing 3 (a). Now, the user who possesses the non-contact card C shall overshoot, and Body a shall perform an automatic reset.

[0015] If a user puts the non-contact card C on the installation base 7, a communication link will be started between the non-contact card C and Body a (step 100 affirmation, step 102 affirmation.). Hereafter, a step is set to S. . The insufficient tariff which the contents of the memory 24 of the non-contact card C are first read by communication with Body a and the non-contact card C, and is equivalent to the \*\*\*\* section is computed by CPU13, and the computed insufficient tariff is displayed on the annunciator section 2 (S104, S106). Therefore, when payment [ the money corresponding to the displayed insufficient tariff can be inserted in hardening input port 4 or a slot for bills 5 and can be paid or / the insufficient tariff / with a prepaid card ], a user can insert a prepaid card in the prepaid card insertion opening 6, and can perform it.

[0016] If payment of an insufficient tariff is completed (S108 affirmation), the paid data from Body a will be written in memory 24, and, subsequently to the annunciator section 2, the display of the purport which settlement of accounts ended will be made (S110, S112). Thereby, a user carries out the non-contact card C from the installation base 7, can communicate with an automatic ticket gate (not shown) in non-contact, and can participate.

[0017] The control action at the time of drawing 3 (b) participating through an automatic ticket gate using the non-contact card C with which paid data were written in is shown. That is, if the non-contact card C approaches the communications area of an automatic ticket gate, communication will be performed between the non-contact card C and an automatic ticket gate (S200 affirmation, S202

affirmation). The paid data of memory 24 are read by this communication with an automatic ticket gate, data processing for a ticket gate is performed, and while an automatic ticket gate is controlled to allow passage of a user, the paid data in memory 24 are cleared (S204).

[0018] As mentioned above, since the automatic-reset machine concerning this example wrote paid data in the non-contact card C, a user can participate using the non-contact card C, without inserting a settlement-of-accounts ticket in an automatic ticket gate.

[0019]

[Effect of the Invention] A communication means by which the automatic-reset machine concerning this invention communicates with a non-contact card, and an insufficient tariff calculation means to data-processing-compute an insufficient tariff based on the data currently recorded on the non-contact card into which it inputted through the communication means, Since it was made to have a display means to display the insufficient tariff computed with the insufficient tariff calculation means, and the write-in means which writes paid data in a non-contact card through a communication means when the tariff displayed on the display means is injected A user can participate by the automatic ticket gate and non-contact, without inserting a settlement-of-accounts ticket in an automatic ticket gate.

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**CLAIMS**

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[Claim(s)]

[Claim 1] A communication means to communicate with a non-contact mold commuter pass, and an insufficient tariff calculation means to data-processing-compute an insufficient tariff based on the data currently recorded on said non-contact mold commuter pass inputted through said communication means, The automatic-reset machine characterized by having a display means to display the insufficient tariff computed with said insufficient tariff calculation means, and the write-in means which writes paid data in said non-contact mold commuter pass through said communication means when the tariff displayed on said display means is injected.

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